



**Energy Efficiency and Renewable Energy
Federal Energy Management Program**

How to Buy an Energy-Efficient Residential Refrigerator

Why Agencies Should Buy Efficient Products

- Executive Order 13123 and FAR part 23 direct agencies to purchase products in the upper 25% of energy efficiency, including all models that qualify for the EPA/DOE ENERGY STAR[®] product labeling program.
- Agencies that use these guidelines to buy efficient products can realize substantial operating cost savings and help prevent pollution.
- As the world's largest consumer, the federal government can help "pull" the entire U.S. market towards greater energy efficiency, while saving taxpayer dollars.

Federal Supply Source:

- General Services Administration (GSA)
www.fss.gsa.gov
www.gsaadvantage.gov

For More Information:

- DOE's Federal Energy Management Program (FEMP) Help Desk and World Wide Web site have up-to-date information on energy-efficient federal procurement, including the latest versions of these recommendations.
Phone: (800) 363-3732
www.eren.doe.gov/femp/procurement
- DOE has ENERGY STAR[®] refrigerator model listings.
Phone: (800) 363-3732
www.energystar.gov
- American Council for an Energy-Efficient Economy (ACEEE) publishes the *Consumer Guide to Home Energy Savings*.
Phone: (202) 429-0063
aceee.org
- Consumers Union publishes *Consumer Reports* magazine and the *Consumer Reports Annual Buying Guide*.
Phone: (800) 500-9760
www.consumerreports.org
- *Home Energy* magazine provides energy conservation tips.
Phone: (510) 524-5405
www.homeenergy.org
- Lawrence Berkeley National Laboratory provided supporting analysis for this recommendation.
Phone: (202) 646-7950

Efficiency Recommendation

Refrigerator Type ^a	Total Volume ^b	Annual Energy Consumption	
		Recommended	Best Available ^c
Single-Door Compact	≤ 2.4 cu. ft.	270 kWh or less	—
Single-Door Compact	2.5 - 4.4 cu. ft.	285 kWh or less	—
Single-Door Compact	4.5 - 6.4 cu. ft.	305 kWh or less	245 kWh
Single-Door Compact	6.5 - 8.4 cu. ft.	325 kWh or less	—
Single-Door Compact	≥ 8.5 cu. ft.	345 kWh or less	—
Bottom-Mount Freezer	≤ 18.4 cu. ft.	505 kWh or less	501 kWh
Bottom-Mount Freezer	18.5 - 20.4 cu. ft.	510 kWh or less	—
Bottom-Mount Freezer	≥ 20.5 cu. ft.	515 kWh or less	510 kWh
Top-Mount Freezer	≤ 10.4 cu. ft.	350 kWh or less	—
Top-Mount Freezer	10.5 - 12.4 cu. ft.	375 kWh or less	—
Top-Mount Freezer	12.5 - 14.4 cu. ft.	400 kWh or less	394 kWh
Top-Mount Freezer	14.5 - 16.4 cu. ft.	420 kWh or less	372 kWh
Top-Mount Freezer	16.5 - 18.4 cu. ft.	445 kWh or less	414 kWh
Top-Mount Freezer	18.5 - 20.4 cu. ft.	465 kWh or less	417 kWh
Top-Mount Freezer	20.5 - 22.4 cu. ft.	480 kWh or less	457 kWh
Top-Mount Freezer	22.5 - 24.4 cu. ft.	500 kWh or less	498 kWh
Top-Mount Freezer	≥ 24.5 cu. ft.	520 kWh or less	516 kWh
Side-by-Side Freezer	≤ 20.4 cu. ft.	590 kWh or less	—
Side-by-Side Freezer	20.5 - 22.4 cu. ft.	610 kWh or less	568 kWh
Side-by-Side Freezer	22.5 - 24.4 cu. ft.	640 kWh or less	605 kWh
Side-by-Side Freezer	24.5 - 26.4 cu. ft.	665 kWh or less	591 kWh
Side-by-Side Freezer	26.5 - 28.4 cu. ft.	685 kWh or less	—
Side-by-Side Freezer	≥ 28.5 cu. ft.	710 kWh or less	614 kWh

- a) Except for compacts, all are automatic defrost and include models with or without through-the-door ice service.
- b) Total volume is the sum of refrigerator and freezer volumes and kWh performance is based on DOE test procedure.
- c) "—" indicates that data isn't available on models exceeding the current national efficiency standard.

The General Services Administration offers refrigerators through its on-line shopping network, *GSA Advantage!* Look for products that meet the recommended efficiency levels. When buying from a commercial source (retailer or distributor), choose models that qualify for the EPA/DOE ENERGY STAR® label (see “For More Information), all of which meet the recommended levels. Some manufacturers and retailers display the label on complying models. Alternatively, look at the yellow “EnergyGuide” label to identify models with an estimated annual energy use that meets these Efficiency Recommendations. For a contractor-supplied refrigerator, specify an estimated annual energy use that meets the recommended efficiency level for that type and size.

Where to Find Energy-Efficient Refrigerators



Choosing an oversized refrigerator will increase purchase cost and also waste energy due to excess capacity. Select a refrigerator size that is appropriate for the number of people and level of use in your office suite, household, etc. “Side-by-side” refrigerator/freezer models generally consume more energy than top- or bottom-freezer models. “Through-the-door” ice models typically use more energy than refrigerators without this feature.

Size and Type Selection

Many of today’s refrigerators use chlorine-free hydro fluorocarbon (HFC) refrigerants and other ozone-safe refrigerants having a low Ozone Depletion Factor (ODF). When retiring an older refrigerator containing ozone-destroying refrigerants with high ODFs, the Clean Air Act requires that the refrigerant be recovered prior to final disposal. For more information, contact EPA’s hotline at (800) 296-1996.

Environmental Tips

Refrigerator Cost-Effectiveness Example (Top-mount freezer, 18.8 cu. ft.)

Performance	Base Model ^a	Recommended Level	Best Available
Annual Energy Use	500 kWh	465 kWh	417 kWh
Annual Energy Cost	\$30	\$28	\$25
Lifetime Energy Cost	\$354	\$329	\$295
Lifetime Energy Cost Savings	–	\$25	\$59

Definition

Lifetime Energy Cost is the sum of the discounted value of annual energy costs based on average usage and an assumed refrigerator life of 19 years. Future electricity price trends and a discount rate of 3.3% are based on federal guidelines (effective from April, 2001 to March, 2002).

a) Annual energy use of the base model is meets current national appliance standards, see 10 CFR 430, Sub-Part B, Appendix A1.

Cost-Effectiveness Assumptions

Annual energy use in this example is based on the standard DOE test procedure for a top-mount freezer model. The assumed electricity price is 6¢/kWh, the federal average electricity price (including demand charges) in the U.S.

Using the Cost-Effectiveness Table

In the example above, a refrigerator with an estimated annual energy use of 465 kWh is cost-effective if its purchase price is no more than \$25 above the price of the Base Model. The Best Available model, with an annual energy use of 417 kWh, is cost-effective if its price is no more than \$59 above the price of the Base Model.

Metric Conversion

1 cubic foot = 28.3 liters

What if my Electricity Price is different?

FEMP provides a Web-based “cost calculator” screening tool that simplifies energy cost comparisons between different refrigerators. The cost calculator allows you to adjust the capacity, hours of operation, and electricity cost for your installation. To use the calculator, go to www.eren.doe.gov/femp/procurement/calc_rr.shtml.

